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New and little known species of *Aphodius* (subgenus *Aphodaulacus*) from Middle Asia and China (Coleoptera: Scarabaeidae)

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Frolov, A.V. 2002. New and little known species of *Aphodius* (subgenus *Aphodaulacus*) from Middle Asia and China (Coleoptera: Scarabaeidae). *Zoosystematica Rossica*, **11**(1): 163-165.

The species of *Aphodius*, subgenus *Aphodaulacus* W. Koshantschikov, group *turkestanicus*, from Middle Asia and China are reviewed. Two new species are described: *A. kizeritskyi* sp. n. and *A. grumi* sp. n.

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Two new species of the subgenus *Aphodaulacus* W. Koshantschikov closely related to *A. turkestanicus* Heyden, the type species of the subgenus, were found in the collection of Zoological Institute in St. Petersburg (ZISP). A review of 4 species of the group *turkestanicus*, distributed in Middle Asia and China, is given below. The examined material, including type specimens, is deposited in ZISP. Author's notes are in square brackets.

Aphodius (Aphodaulacus) turkestanicus Heyden, 1881
(Figs 2, 7, 9)

Material. **Kazakhstan:** Muyun Kum Desert, VII. 1908, 7 spm., and VI.1908, 3 spm. (Fischer); Akmolinsk [= Astana], 20 spm. (Kricheldorff); Malye Barsuki Desert, 5.VI.1931, 1 spm. (Luppova). **Uzbekistan:** locality Zhamansai, 140 km NW of Shafrikan, 27.IX. 1967, 1 spm. (Falkovich). **China,** *Xinjiang Uygur Autonomous Region*: Mu-lei-khe River, ca. 200 km E of Urumqi, northern slope of Bogda Shan Mts., 16.IX. 1889, 48 spm.; river SE of Mu-lei-khe, 16.IX.1889, 62 spm.; Ulan-usu River, ca. 250 km E of Urumqi, 1.X.1889, 5 spm. (Grum-Grzhimailo).

Diagnosis. This species can be separated from other species of the group by the impubescent sides of dorsal surface of pronotum (Fig. 2) and the shape of parameres (Fig. 9). From *A. kizeritskyi* sp. n., it differs also in the weakly visible pubescence on disc of elytra in ♀ (Fig. 7).

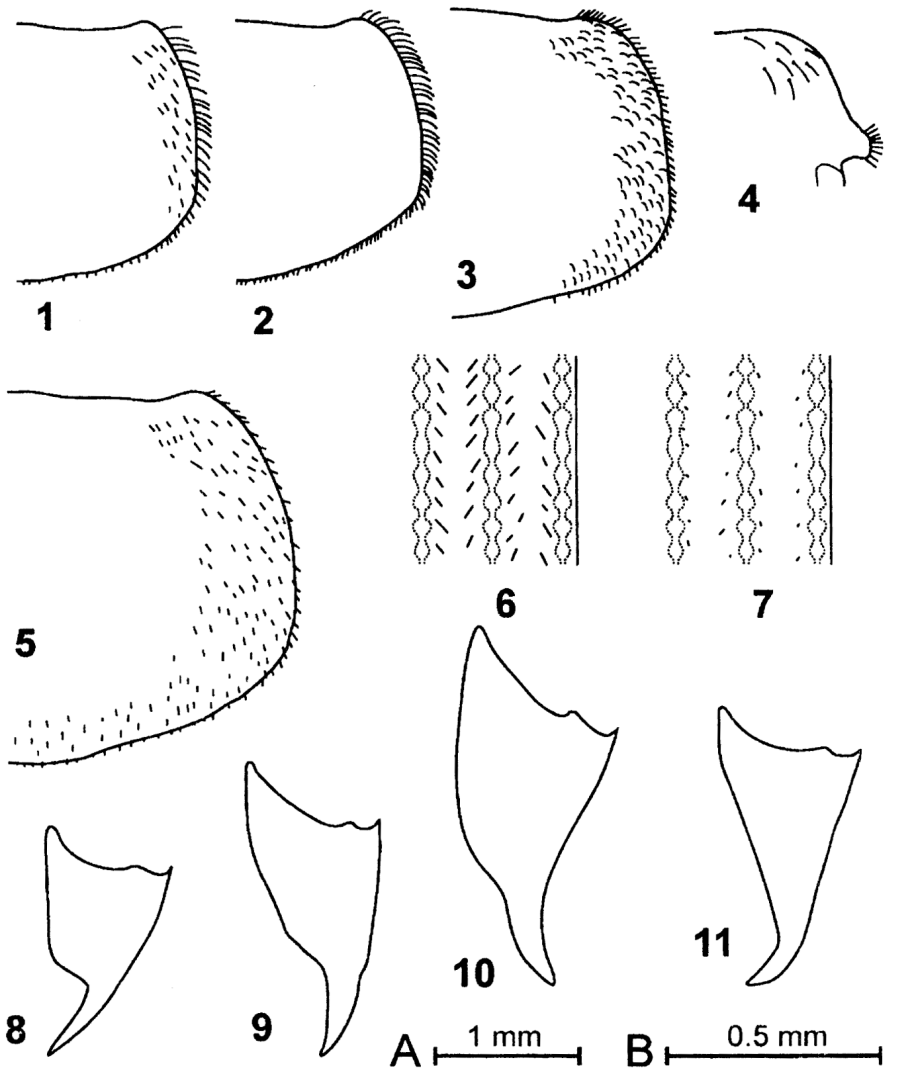
Distribution. According to Nikolajev (1987: 117), the species is distributed throughout Middle Asia up to Zaissan Depression in the northeast. The species is reported from China (Chinese Tien Shan) for the first time.

Aphodius (Aphodaulacus) kizeritskyi sp. n.
(Figs 1, 6, 8)

Holotype. ♂, **Turkmenistan**, "Zakaspiyskaya obl. Duzolum" [Duzu-Olum, Sumbar River, ca. 10 km upstream of Sharloun], 21.X.1902, "collection of Yakovlev".

Paratypes. **Turkmenistan**: 1 ♀, Imam Baba, C.O. Anger, 3.XI.1899, "collection of Yakovlev"; 1 ♀, Iolotan', 12.XI.1912, V. Kizeritsky. In addition to the type material, a damaged male without head was examined; it was originally mounted on the same pin with female paratype from Imam-Baba.

Description. Male (holotype). Head shiny, brown on disc, pale brown on anterior part and sides of clypeus, sparsely regularly punctate (punctures separated by 3-5 times a puncture diameter). Clypeus wide, feebly sinuate on anterior margin, widely rounded at sides. Genae acute-angled, distinctly separated from lateral margins of clypeus, strongly protruding past eyes, with a dense wisp of long setae. Head without frontal tubercles and frontoclypeal suture. Width of eye in ventral view slightly less than minimum interval between eye and gula. Pronotum shiny, brown on disc, pale brown on sides. Anterior margin and base not bordered, lateral margins with fine border. Disc sparsely regularly punctate (punctures separated by 4-6 times a puncture diameter). Posterior angles of pronotum obtuse, sides with short yellowish setae; pleural setae, visible from above, relatively long and dense (Fig. 1). Scutellum narrowly triangular, shiny, brown, impunctate and smooth in apical part. Elytra pale brown, with brown maculae on interstices 3-8, without humeral denticles. Elytral interstices feebly convex, densely punctate and densely pubescent with relatively long yellow-



Figs 1-11. *Aphodius.* **1, 6, 8,** *A. kizeritskyi* sp. n.; **2, 7, 9,** *A. turkestanicus*; **3, 4, 11,** *A. ignobilis*; **5, 10,** *A. grumi* sp. n. 1-3, 5, pronotum in dorsal view; 4, head in dorsal view; 6, 7, part of elytral disc near sutural margin; 8-11, parameres in lateral view. Scales: A – to Figs 1-5, B – to Figs 8-11.

ish setae. Striae fine and shallow. Underside of body and legs pale brown. Spur of anterior tibia acute and slightly curved downward, reaches middle of 2nd tarsal segment. Lower spur of middle tibia shorter than half the length of upper spur, its apex truncate. First segment of posterior tarsus slightly longer than upper spur of tibia and nearly as long as 3 following segments together. Apical setae of posterior tibiae of unequal length. Disc of metasternum slightly concave, with sparse setae on perimeter. Apices of parameres slender and acute, slightly curved upward (Fig. 8). Body length 6.0 mm.

Female can be separated from male by narrower and more densely punctate pronotum, shorter and sparser setae on elytral intervals, and acute lower spur of middle tibia.

Variability. The examined specimens slightly differ in the pattern of dark maculae on elytra. The damaged male, not included in the type series, differs from the holotype in the more densely punctate pronotum and longer upper spur of pos-

terior tibia, which is slightly longer than first segment of tarsus. Body length of paratypes 5.0-5.5 mm.

Diagnosis. This species can be easily separated from other species of the *turkestanicus*-group by the shape of parameres and relatively dense pubescence of the entire elytra in females (Fig. 6). From *A. turkestanicus*, it can also be separated by the pubescent sides of dorsal surface of pronotum.

Distribution. The species is found in two distant localities in Krasnovodsk and Mary provinces of Turkmenistan. Probably, the species is widely distributed in southern Kara Kum Desert, reaching the inner regions of the desert along river banks.

Aphodius (Aphodaulacus) ignobilis Reitter, 1887
(Figs 3, 4, 11)

Material. **China:** *Qinghai Province*: southern coast of Qinghai Hu (Kuku-Nor), mid-August 1901, 6 spm. (Kozlov); Babo-he and Hei-he rivers [ca. 150 km N of Qinghai Hu], 13.VIII.1890, 7 spm. (Grum-Grzhimailo); *Gansu Province*, VIII.1872, 1 spm. (Przhewalski). In ZISP collection, there are also two specimens labelled "Amdo 1886 G. Potanin" and "Amdo 1884 Przhewalski"; the last specimen bears also a hand-written label of unknown author "*A. ignobilis* Rtt. Type", but it is not a name-bearing type.

Diagnosis. The species can be easily separated from other species of the *turkestanicus*-group by the pubescent clypeus in both sexes (Fig. 4) and the shape of parameres (Fig. 11).

Distribution. The species is endemic to Central China. Balthasar (1964: 211) reported this species from "Buchara, Buda-Gebirge" (it must be Burhan Budai Range in Qinghai, wherefrom the species was described) and from "Turkestan". Probably, it was reported from "Turkestan" basing on misidentified specimens of *A. turkestanicus* or mislabelled material, as also supposed by Nikolajev (1987: 117).

Aphodius (Aphodaulacus) grumi sp. n.
(Figs 5, 10)

Holotype. ♂, **China:** *Qinghai Province*, Babo-he and Hei-he rivers [ca. 150 km N of Qinghai Hu], 13.VIII.1890 (Grum-Grzhimailo), "*Aphodius ignobilis* Rtt. W. Koshantschikov det.".

Description. Male (holotype). Head shiny, pale brown with faint reddish tint; elytra yellowish brown without reddish tint, with indistinct darker maculae on intervals 3-7; sclerites semitransparent (probably, the specimen is incompletely melanised). Head densely regularly punctate (punctures separated by 1-2 times a puncture diameter). Clypeus wide, spade-shaped, nearly not sinuate on anterior margin, but with strongly incrassate border; its anterior angles widely rounded. Genae acute-angled, distinctly separated from lateral margins of clypeus, strongly protruding past eyes, with dense wisp of long setae. Head not tuberculate; frontoclypeal suture distinct. Width of eye in ventral view slightly less than minimum interval between eye and gula. Anterior margin and base of pronotum not bordered, lateral margins slightly flattened and distinctly bordered. Disc relatively densely regularly punctate (punctures separated by 1-2 times a puncture diameter). Posterior angles of pronotum obtuse, sides and base with short yellowish setae; pleural setae, visible from above, relatively short and sparse (Fig. 5). Scutellum narrowly triangular, shiny, brown, impunctate and smooth in apical part. Elytra without humeral denticles. Elytral intervals feebly convex, densely punctate and densely pubescent with relatively long yellowish setae. Striae fine and shallow. Spur of anterior tibia acute and slightly curved downward and outward, reaching apex of 1st tarsal segment. Lower spur of middle tibia 1/3 the length of upper spur, its apex obliquely truncate. First segment of posterior tarsus as long as upper spur of tibia and slightly shorter than 3 following segments together. Apical setae of posterior tibia of unequal length. Disc of metasternum with long dense setae. Apices of parameres acute and curved downward (Fig. 10). Body length 9.0 mm.

Female unknown.

Diagnosis. This species can be separated from other species of the *turkestanicus* group by its larger size, curved downward apices of parameres, and pubescent base of pronotum.

Etymology. The species is named in honour of G.E. Grum-Grzhimailo, Russian researcher of Middle and Central Asia, who collected the type specimen.

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Received 12 July 2001